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RECENT EXPERIENCES OF SELECTED HOUSEHOLD SURVEYS IN AFRICA IN THE 1980s: HEALTH, NUTRITION AND DEMOGRAPHIC SURVEYS

(Prepared by UNICEF)

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I. INTRODUCTION

1. The 1985 article on the potential of national household survey programmes for monitoring and evaluating primary health care in developing countries published in the World Health Statistics Quarterly remains a largely accurate account of the current situation of health and nutrition, and demographic mortality surveys.1/ This article is therefore attached for reference and the present paper provides an update on some of the interesting developments with particular reference to nutrition and demographic measurement of mortality.

2. A number of recent developments in social policy and international programme action have underlined the important role of household surveys in the areas of health, nutrition and mortality. Particularly in Africa, the need to monitor human and social indicators in the adjustment process has created a renewed demand for national surveys on the effects of economic recession on the poor and vulnerable groups. Efficient monitoring of changes in child welfare for the purpose of policy making requires the regular collection and analysis of three sorts of indicators - status, process and output.2/ Status indicators would consist primarily of the nutritional and health status of children. They would include particularly:

1. Indicators of nutritional status for the under fives and for children entering primary school,

2. Low birth weight,

3. Infant and under five mortality rates, and

4. Indicators of morbidity.

3. Another important impetus to strengthen national survey programmes is the need to monitor achievements towards child related and human and social goals for the year 2000. National governments, both individually and through the UN system are in the process of adopting goals for the year 2000. The World Health Organization (WHO) and UNICEF have agreed on broad range of goals for the health development of women and children by the year 2000 as part of their contribution to the work of the proposed Fourth United Nations Development Decade (1991-2000). The UNICEF/WHO Joint Committee on Health Policy issued a statement on those common goals in January 1989 (JC/27/UNICEF-WHO/895), building directly on the social goals of the Third United Nations Development Decade (1981-1990), adopted by the United Nations General Assembly in its resolution 35/56 of 5 December 1980.

4. Regular and rapid monitoring of national and subnational achievements towards these human and social goals will be required. Key indicators to monitor such progress will include under-five and infant mortality rates, the nutritional status of young children, etc. The monitoring programme will need to be in place by 1990 at the latest in order to establish reliable baseline estimates and, subsequently, to determine the progress being achieved.

5. The interest to monitor on a continuous basis a few core indicators of food and nutriton within the context of the Interagency Food and Nutrition Surveillance Programme (IFNS) requires national estimates from household surveys on a continuing basis. The UN agencies and member States, especially in Africa, have decided to give particular attention to improving maternal health and ensuring safe motherhood. This places increased importance on the estimation of levels of maternal mortality and their trends.

6. The declining proportion of national government budgets allocated to the social sectors, in particular to primary health care, has led to the development of innovative approaches to community financing schemes in primary health care such as the Bamako Initiative. The issue of affordability at the household level requires improved information about what people are paying and are willing to pay for health services. Household surveys have major role to play in providing this important information.

II. NUTRITIONAL STATUS SURVEYS

7. There has been significant progress in recent years in the measurement of nutritional status through anthropometry as part of national household survey programmes. These are based on the methodology of anthropometric assessment of body measurements particularly, weight and height. During the 1970s national nutritional status surveys were carried out in several African countries. However, these were ad hoc special purpose surveys carried out by international organizations outside the framework of national household survey programmes.

8. In recent years these methods have been adopted by national statistical offices. Kenya took the lead and has recently carried out its fourth national nutrition survey. A number of other countries have followed suit having been convinced that anthropometric assessment could be done by lay interviewers and need not be confined to the health community only. The acceptance of anthropometric survey modules was assisted greatly by the technical study prepared by the UN Statistical Office, National Household Survey Capability Programme on "How to Weigh

and Measure Children". The methodology will be further disseminated in the forthcoming companion volume on "Assessing the Nutritional Status of Young Children".

9. The advent of the widespread use of micro computers has also been a catalyst to the rapid analysis of anthropometric survey modules because only a few variables are involved, i.e., weight, height and age of the child. The data sets are relatively small and manageable and can be analysed relatively quickly and with a minimum of training.

10. UNICEF support to nutrition surveillance assisted a number of countries to design and carry out nutritional status surveys and to train national staff in how to analyse the results. This has been accomplished by several countries, such as Kenya and Zimbabwe, by linking a small nutrition module to a larger survey with a sampling design which allows for quarterly estimates such as the case of labour force and employment and household expenditure surveys. The next challenge is to try to measure nutritional status on a continuous basis, year after year. The Interagency Food and Nutrition Surveillance Programme is now broadening the scope of these earlier efforts and placing an emphasis on the continuing measurement of nutritional status in national household survey programmes. It may not be feasible to measure both height and weight as the additional equipment needed for height measurements and the time it takes to take the measurement is more cumbersome than taking the weight. If it is not possible to measure heights on a continuous basis then a periodic cross sectional assessment of height, say every two to three years, could be a useful complement to a continuous measurement of weight. Ideally estimates of prevalence of under-nutrition would be produced on a quarterly basis.

11. Beyond the importance of continuous measurement of nutritional status to signal changes in trends in levels of under-nutrition, the in-depth analysis of nutritional status of children, taken together with the information on labour force, employment and household expenditures as well as health status and health practices is useful for understanding better these relationships and formulating policies to deal with them.

12. The next ten years should show a dramatic increase in the frequency and coverage of nutritional status. This will be particularly important for monitoring child development and more broadly tracking social development as a companion to mortality measurement which reflects the survival status of children and, on the other hand, as a comparison to income measurement which reflects on the economic status of children in the households.

III. HEALTH SURVEYS

13. Although considerable progress has been made in nutritional assessment and mortality measurement, health measurement still remains problematic. On the positive side, national statistical authorities and national governments have recognised the importance of periodic national surveys of health status and health conditions. The measurement of access and use of health services has met with relative success and is understood by the survey practitioners. The measurement of morbidity, however, still remains a difficult and thorny issue. As most health surveys do not include a health examination component by a health professional, it is necessary for morbidity measurements to be based upon self reporting of respondents. The accuracy of reporting is compromised by the perception of illness on the part of the respondent and the ability to recall episodes of illness as is required by retrospective surveys. In addition, we must be satisfied with an imprecise reporting of signs, symptoms and conditions such as fever, cough, etc. For these reasons the reporting of morbidity and its interpretation is lagging behind the advances of nutritional assessment and mortality measurement.

IV. DEMOGRAPHIC SURVEYS FOR ESTIMATING CHILD MORTALITY

14. There is renewed current interest to monitor more frequently and more accurately the levels, trends and differentials in infant and child mortality as indicators of child survival and development. This interest is driven by the fact that the data on mortality are very sparse and in many cases of questionable quality. Because of infrequent censuses and surveys, many of the national estimates that are being used are based upon demographic projections using old data and models which made assumptions that may or not be applicable. This is particularly true in Africa and consequently there is a great deal of interest to measure infant and child mortality more frequently.

15. A major monitoring focus should be on under five mortality. Estimates of under five mortality tend to be more reliable than those of infant mortality and also reflect the broader range of health and nutrition consequences.

16. UNICEF convened a recent meeting 3/ on this topic and with an interest to clarify the various methods of demographic measurement that could be used to evaluate more frequently and to provide a more up-to-date assessment of current mortality. The meeting concluded that there is no single "golden" demographic

estimation method that can be internationally or even regionally recommended. There are a number of different methods in common use, each with their strengths and weaknesses, and two summaries of the main methods are attached.

17. Experience in analysing the results of all the demographic methods described in these two attachments shows that the same method used in different countries, or even the same country, can produce results varying widely in quality, even within the same international survey programme with recommended standard procedures. This might be due in part to cultural differences but more importantly to different ways in which the questions are asked or collected. If the training is inadequate, if the sample is poorly taken, if the data are poor, etc., the results of any method will be poor. So it was recommended that we should not try to use the results of a favourable or unfavourable "test" of one method in one country as the basis of a blanket recommendation or disavowal of others. However, it was the general view that the Brass (Children Ever Born/Children Surviving) method, especially for under five mortality, and the full birth history method have produced the most consistently reliable results.

18. The choice of method depends on the importance that is given to different competing requirements. The most desirable requirements will include ease of data collection; producing reliable estimates; not being affected by changes in fertility which is a critical issue in countries where fertility is dropping rapidly; providing the most recent estimates; providing trend estimates; distinguishing by age; taking into account random mortality fluctuations; being easy to analyse with a hand calculator; having available a micro computer package that is easy to learn; and last but most certainly not least being inexpensive.

19. Unfortunately, many of these desirable features are incompatible with each other. It is not possible to propose one method that gets the best of all worlds. One cannot estimate child mortality cheaply, reliably and quickly all at the same time. The choice in each country should be the result of a careful decision weighing up the advantages and disadvantages of each method and will depend on the relative importance of the various desirable features, noted above viewed in the context of each country's particular cultural and institutional circumstances.

20. None of these estimation methods can provide a current mortality estimate, i.e., one that refers to the actual date of the survey. Unfortunately, the method producing the most recent estimates, i.e., the survival of the most recent birth method produces the least reliable estimates. It was therefore

recommended that the aim should be to produce reliable estimates referring to a period from two and a half to four years before the survey date and, on the basis of these estimates, make some reasonable projections forward to the current date and a few years on. Through periodically repeated surveys one will in this way produce a series of rolling estimates each one superimposed upon and correcting the previous estimates and each time taking the estimates forward a few more years. The Brass CEB/CS method and the full birth history method are very advantageous in this respect because they permit the estimation of trends and thus allow for comparison with previous trend estimates, especially for under five mortality.

21. None of the estimation methods eliminates the problem of omission, i.e., the failure to report or to obtain complete information on child deaths. Under-estimation of mortality is common in surveys in African countries, even ones which are done with a great deal of care. This is particularly serious in the case of estimating neonatal deaths and deaths of female children for a wide variety of cultural and institutional reasons.

22. Unlike conventional direct estimation methods, indirect methods also require considerable demographic expertise to carry out the analysis necessary to produce the estimates. However, software packages where they are available, help to reduce this analysis problem considerably.

23. Whatever estimation method is used in a demographic survey, it is essential that every feasible step is taken to improve the quality of the survey design in order to increase the reliability and precision of the estimates, and very importantly, to know what that degree of precision is.

24. It is hoped that through these special efforts to carry out demographic surveys of mortality that regular monitoring mortality will be within the reach in most African countries.

REFERENCES

1/ Carlson, Beverley A. The Potential of National Household Survey Programmes for Monitoring and Evaluation Primary Health Care in Developing Countries. World Health Statistics Quarterly, 38 (1), 1985.

2/ This Section is based on the chapter by Frances Stewart on "Monitoring and Statistics" in the publication Adjustment With a Human Face edited by G.A. Cornia, R. Jolly and F. Stewart.

3/ Management by Objectives: The Use of Household Surveys for Estimating Child Mortality, Nutritional Status and Health Interventions and Conditions, UNICEF, New York.

COMPARISON OF CHILD MORTALITY ESTIMATORS SUITABLE FOR GENERAL HOUSEHOLD SURVEYS

FEATURE	CEB/CS (BRASS)	SPB	SMRB	TBH	FBH
Data collection	EASY	EASY (NO DATES) OR MODERATE (DATES)	EASY	DIFFICULT	VERY DIFFICULT
Sample Size	SMALL (ERRATIC TRENDS) MEDIUM (STABLE TRENDS)	SMALL/ MEDIUM	MEDIUM	MEDIUM/ LARGE	MEDIUM
Estimates Robust?	YES	NOT KNOWN	NO	NOT VERY	YES
Unaffected by Change in Fertility?	NO	NO (NO DATES) YES (WITH DATES)	YES	YES	YES
Smooth Mortality Spikes?	YES	YES	NO	YES	YES
Estimates:					
Trends	4-15	NO (UNLESS REPEATED)	NO (UNLESS REPEATED)	NO (UNLESS REPEATED)	YES
Sex Diffs.?	YES	YES	YES	YES	YES
Age Patterns?	NO	NO	NO	YES	YES
Reference Date	4-15	c.-2.5	-0.5	-2.5	-2.5 TO -12.5
Add - on for Cause?	NO	YES	YES	YES	YES RECENT BIRTHS
Analysis Rank	3	1=	4	9	4

CEB/CS - CHILD EVER BORN/CHILDREN SURVIVING
SPB - SURVIVAL OF THE PREVIOUS BIRTH
SMRB - SURVIVAL OF THE MOST RECENT BIRTH
TBH - TRUNCATED BIRTH HISTORY
FBH - FULL BIRTH HISTORY

SYNOPTIC COMPARISON OF VARIOUS METHODS ALLOWING THE ESTIMATION OF MORTALITY IN CHILDHOOD

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The methods whose strengths and limitations are described below allow the estimation of several indicators of mortality in childhood. The definition of the most commonly used indicator follow.

Infant mortality:

Denoted by a(1), it is the probability of dying between birth and exact age 1. It is usually expressed in terms of number of deaths of children under age 1 per 1000 live births.

Under five mortality:

Denoted by a(5), it is the probability of dying between birth and exact age 5. It is also expressed as number of deaths of children under age 5 per 1000 live births.

a(2):

Denotes the probability of dying between birth and exact age 2. It can be expressed as the number of deaths of children under age 2 per 1000 live births.

I. BRASS METHOD

1. Information needed

-- Number of children ever born classified by five-year age group of mother.

-- Number of children dead classified by five-year age group of mother.

-- Number of women aged 15-49 (including the childless and single) by five-year age group.

2. Data gathering method used

-- Census

-- Survey (focusing on households, generally)

3. Estimates obtained

-- Estimates of under five mortality, a(5), for different time points ranging from 1 to 15 years before the time of the survey, each derived from the information provided by women in a given five-year age group (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49).

-- Estimates of infant mortality, a(1), for the same time points as the a(5) estimates above. Each a(1) is derived from the information provided by women in a given five-year age group.

4. Strengths

-- The information needed is easy to obtain because at most three questions about children need to be posed to each woman aged 15-49 and their answers involve reporting only total number of events, not dates.

-- The method allows the estimation of trends in child mortality through a single application.

-- The method has been used extensively and the estimates it yields are generally acceptable.

-- When the data are gathered via sample surveys, samples of only moderate size are needed.

5. Limitations

-- Because the method uses cumulated retrospective data, the estimates obtained tend to smooth actual mortality fluctuations.

-- Because mortality models are used to derive comparable estimates for the different time points, the choice of the wrong model can lead to biased estimates. Potential biases, however, are likely to be larger for the estimates of infant mortality, a(1), than for those of under five mortality a(5).

-- Since children of younger women are generally subject to higher mortality relative to those whose mothers are older, the estimates derived from data corresponding to women aged 15-19 and 20-24 tend to overestimate mortality levels among all children. Higher mortality among children of younger women may be due to a selection bias related to the fact that, in societies where age at marriage is relatively high, only relatively disadvantaged women have children at young ages.

-- Since estimates obtained from the data corresponding to women aged 15-19 and 20-24 refer to periods between 1 and 3 years preceding interview, the method produces reliable estimates only beyond that period, that is, between 4 and 15 preceding interview.

-- Very drastic changes in the timing of fertility can introduce biases in the estimates obtained.

II. FULL FERTILITY HISTORIES

1. Information needed

-- Dates of birth of all the children ever borne by each woman (generally aged 15-49). (Ages of children may be recorded when dates are not known).

-- Dates of death of those children who have died. (Age at death may be recorded instead).

2. Data gathering method used

-- Surveys involving detailed interviews with women aged 15-49.

3. Estimates obtained

-- Under five mortality, a(5), for different time periods (2.5 to 12.5 years) prior to the survey or for different birth cohorts.

-- Infant mortality, a(1) for different time periods (0.5 to 14.5 years, if the sample is large) prior to the survey or for different birth cohorts.

4. Strengths

-- The information gathered permits the direct estimation of trends in infant and under five mortality.

-- The data permit to establish the age pattern of mortality in childhood by comparing estimates of a(1) and a(5) for the same period.

-- Estimates of mortality in childhood for the most recent period preceding the survey can be obtained.

5. Limitations

-- Because exact dates are needed, the method demands careful interviews that are generally costly.

-- Recall errors affecting the accuracy of the dates reported introduce biases in the estimates obtained.

-- The use of fertility histories to estimate mortality in childhood has been widely tested. The results are mixed regarding the adequacy of the estimates obtained.

-- Estimates referring to the most recent period preceding the survey are often subject to biases resulting from misreporting errors.

III. TRUNCATED FERTILITY HISTORIES

1. Information needed

-- Dates of birth of the last three children ever born by each woman aged 15-49 (truncation can be effected at other birth orders or even in terms of dates of birth).

-- Dates of death of those children who have died among the last three ever born.

2. Data gathering method used

-- Surveys involving interviews with women aged 15-49.

3. Estimates obtained

-- Infant mortality, a(1), and the probability of dying by age 2, a(2), for the period of approximately five years preceding the survey (that is, centred around 2.5 years prior to the survey).

4. Strengths

-- The estimation of infant mortality for recent periods is possible.

-- The data provide information about the age pattern of mortality in childhood.

5. Limitations

-- Because exact dates are recorded, the method demands careful interviews that tend to be expensive.

-- Recall errors affecting the accuracy of the dates reported introduce biases in the estimates obtained.

-- The use of truncated fertility histories has not been as widespread as that of complete histories. The general adequacy of the estimates they yield remains to be tested.

-- Truncation reduces the usefulness of the data for the estimation of trends through a single application.

IV. BRASS-MACRAE METHOD

1. Information needed

-- Number of women who have just given birth and who have had a previous child.

-- Number of those women whose previous child has died.

2. Data gathering method used

-- Continuous data collection in hospitals or maternity clinics (places where women give birth).

3. Estimates obtained

-- The probability of dying by age 2, a(2). Yearly estimates are possible if the data collection system is maintained for several years.

4. Strengths

-- The method uses data that are relatively easy to obtain and produces relatively recent estimates.

-- It allows the follow-up of mortality trends in childhood provided that the data collection system is maintained for several years.

-- In principle, the method would allow the tracking of short-term mortality changes.

5. Limitations

-- Because in most developing countries a significant proportion of women do not give birth in clinics or hospitals, estimates obtained from data gathered exclusively in those sites may not be representative of the whole population.

-- The experience in the use of this method is still limited and its accuracy remains to be tested.

-- Trends can be assessed only through the continuous maintenance of the data collection system over several years. Changes in coverage or in the quality of reports may produce spurious changes in the mortality estimates obtained.

-- The method produces an estimate of a(2). Estimates of a(1) and a(5) can be obtained using models and may be biased if those models are inadequate.

V. PREVIOUS BIRTH METHOD

1. Information needed

-- Date of most recent birth each woman aged 15-49 has had.

-- Whether the child whose birth preceded the most recent one has died or not.

2. Data gathering method used

-- Survey, including interviews with the women themselves.

3. Estimates obtained

-- The probability of dying by age 2, a(2), referring to approximately 2.5 years prior to the survey.

4. Strengths

-- The method produces a relatively recent estimate of child mortality in the form of a(2).

-- Information needed is relatively easy to obtain.

5. Limitations

-- Since the method requires that dates be provided, it is likely to be affected by recall errors and event misdating.

-- The method does not allow the estimation of trends through a single application.

-- Because of its recency, the performance of the method remains to be tested in a variety of settings. In the few available trials of the method, the estimates yielded appear to underestimate mortality in childhood.

VI. MOST RECENT BIRTH

1. Information needed

-- Date of most recent birth each woman aged 15-49 has had.

-- Whether that child survived or not.

2. Data gathering method used

-- Survey (usually of the household type).

3. Estimates obtained

-- Infant mortality, q(1), for the year or so preceding the survey (that is, centred about half a year prior to the survey).

4. Strengths

-- The method produces very recent estimates of infant mortality.

-- The information needed is relatively easy to obtain.

5. Limitations

-- Since the method requires that dates be provided, it is likely to be affected by recall errors and event misdating.

-- The method does not allow the estimation of trends through a single application.

-- This method has been extensively tested and has generally performed poorly, tending to underestimate recent mortality levels.